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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,954	01/17/2004	Paul S. Prevey	LRI-011PAT	8171

7590 01/12/2006

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EXAMINER	
HONG, JOHN C	

ART UNIT	PAPER NUMBER
3726	

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/759,954	PREVEY, PAUL S.	
	Examiner	Art Unit	
	John C. Hong	3726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *20 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *16-20* is/are withdrawn from consideration.

5)☒ Claim(s) *15* is/are allowed.

6)☒ Claim(s) *1-11,13 and 14* is/are rejected.

7)☒ Claim(s) *12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-15 in the reply filed on 10/20/05 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1,3-10 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by James et al. (U.S. Patent 6926970).

James et al. disclose: Regarding Claim(s) 1 and 3-10, a method of inducing residual compressive stresses in the surface of a part comprising the steps of: performing a first operation to induce deep compressive surface stresses along a portion of the surface of the part; and performing a second operation to induce more shallow compressive surfaces stresses along a portion of the surface of the part (Fig. 3,4; col.8, line 50-col.9, line 15; col.11, lines 37-40;col.11, line 60-col.12, line 2; col.55, lines 55-62); and Regarding Claim(s) 14, a method of inducing residual compressive stresses in the surface of a part comprising the steps of: selecting at least one region inducing a first layer of compressive along the surface of the part for stresses within

the surface of the part; performing a first burnishing operation using a first burnishing member to induce a first layer of compressive surface stresses along a selected region of the part, and performing a second burnishing operation using a second burnishing member to induce a second layer of compressive surfaces stresses along a selected region of the part, wherein the first burnishing operation is performed when the temperature of the surface is at a first temperature and the second burnishing operation is performed when the temperature of the surface is at a temperature different than the first temperature(Fig. 3,4; col.8, line 50-col.9, line 15; col.11, lines 37-40;col.11, line 60-col.12, line 2; col.55, lines 55-62).

4. Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by SU701777.

'777 discloses a method of inducing residual compressive stresses in the surface of a part comprising the steps of: selecting at least one region along the surface of the part for inducing a first layer of compressive stresses within the surface of the part, performing a first burnishing operation using a first burnishing member to induce a first layer of compressive surface stresses along a selected region of the part ; and performing a second burnishing operation using a second burnishing member to induce a second layer of compressive surfaces stresses along a selected region of the part, wherein said first burnishing member (10,11) has a first diameter and said second burnishing member having a second different diameter (Abstract; Fig. 1).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over James et al. (U.S. Patent 6926970) in view of SU701777.

James et al. teach the limitations except the first operation is performed with an apparatus for inducing residual compressive stresses comprising a burnishing member having a first diameter and the second operation is performed with a burnishing member having a second diameter.

'777 teaches the first operation is performed with an apparatus for inducing residual compressive stresses comprising a burnishing member having a first diameter and the second operation is performed with a burnishing member having a second diameter (Abstract; Fig.1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the apparatus for inducing residual compressive stresses comprising a burnishing member having a first diameter and the second operation is performed with a burnishing member having a second diameter, as taught by '777 on the method of James et al. so as to improve the surface finish.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over SU701777 in view of James et al. (U.S. Patent 6926970).

'777 teaches the limitations except the temperature of the surface of the part during the first burnishing operation is of a first temperature and the temperature of the surface of the part during the second burnishing operation is of a second different temperature.

James et al. teach the temperature of the surface of the part during the

first burnishing operation is of a first temperature and the temperature of the surface of the part during the second burnishing operation is of a second different temperature (col. 11, lines 57-66).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the temperature of the surface of the part during the first burnishing operation is of a first temperature and the temperature of the surface of the part during the second burnishing operation is of a second different temperature, as taught by James et al. on the method of '777 so as to have longer retention of residual compressive stress.

Allowable Subject Matter

8. Claim15 is allowed.

9. Claim12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C. Hong whose telephone number is 571-272-4529. The examiner can normally be reached on M-F(07:00-16:30)First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bryant can be reached on 571-272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

John C. Hong
Primary Examiner
Art Unit 3726

jh
January 6, 2006

Notice of References Cited	Application/Control No. 10/759,954	Applicant(s)/Patent Under Reexamination PREVEY, PAUL S.	
	Examiner John C. Hong	Art Unit 3726	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,926,970	08-2005	James et al.	428/615
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N	SU701777	12-1979	SU	Tikhomirov	
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

DERWENT-ACC-NO: 1980-G4708C

DERWENT-WEEK: 198030

TITLE: Component cylindrical hole burnishing tool - has bars mounted in mandrel and passing through holes in support ring

INVENTOR: TIKHOMIROV, A A

PATENT-ASSIGNEE: LIPETSK LIPETSKSANT[LIPER] , LIPETSK PIPE WORKS[LIPER]

PRIORITY-DATA: 1977SU-2544084 (November 17, 1977)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
SU 701777 A	December 5 1979	N/A	000	N/A

INT-CL (IPC): B24B039/02

ABSTRACTED-PUB-NO: SU 701777A

BASIC-ABSTRACT:

Tool is based on authors' claim 247072, and comprises a body (1) screwed into boring bar by means of thread section (2), a mandrel (4) with stationary support ring (5) and moving support ring (6) mounted on its body, ring (6) consisting of a stepped bush. A second moving and clamping ring (7) is mounted on ring (6), and is spring loaded by means of bars (8), mounted in the mandrel and passing through hole (9) in ring (6). The tool is useful in burnishing low hardness metals, and the presence of flexible and rigid burnishing mechanisms, and burnishing balls (10, 11), which have different dia., improves the surface finish after only one pass without the necessity of preliminary

treatment with a tool having a flexible ball burnishing mechanism to establish interference and subsequent use of a tool with a rigid ball burnishing mechanism to improve the surface finish.

TITLE-TERMS: COMPONENT CYLINDER HOLE BURNISH TOOL BAR MOUNT MANDREL PASS THROUGH HOLE SUPPORT RING

DERWENT-CLASS: P61

Союз Советских Социалистических Республик

Государственный комитет СССР по делам изобретений и открытий

ОПИСАНИЕ ИЗОБРЕТЕНИЯ

К АВТОРСКОМУ СВИДЕТЕЛЬСТВУ

(11) 701777

(61) Дополнительное к авт. свид-ву № 247072

(22) Заявлено 17.11.77 (21) 2544084/25-08

с присоединением заявки № –

(23) Приоритет –

Опубликовано 05.12.79. Бюллетень № 45

Дата опубликования описания 05.12.79

(51) М. Кл.[2] B 24 B 39/02

(53) УДК 621.923.77 (088.8)

(72) Автор изобретения А. А. Тихомиров

(71) Заявители Липецкое производственное объединение "Липецксантехника" и Трубный завод

(54) РАСКАТНИК

1

Изобретение относится к обработке металлов пластическим деформированием и может найти применение при чистовой и упрочняющей обработке цилиндрических отверстий изделий.

По основному авт. св. № 247072 известен раскатник, содержащий два ряда шариков, опирающихся на неподвижное опорное кольцо и поджимаемых к нему подвижными в осевом направлении опорными кольцами.

Недостатком этого раскатника является то, что он содержит только жесткий механизм раскатывания, что не обеспечивает высокой чистоты обрабатываемой поверхности изделий из металла невысокой твердости.

Целью изобретения является обеспечение совмещения в инструменте упругого и жесткого механизмов раскатывания и повышение чистоты обрабатываемой поверхности.

Для достижения указанной цели раскатник снабжен стержнями, установленными в оправке и проходящими сквозь отверстия, выполненные в опорном кольце.

2

На фиг. 1 изображен раскатник, вид спереди с частичным разрезом; на фиг. 2 – разрез А-А фиг. 1.

Раскатник состоит из корпуса 1, ввинчиваемого резьбовой частью 2 в борштангу 3. На оправке 4 корпуса установлены неподвижное опорное кольцо 5 и подвижное опорное кольцо 6, выполненное в виде ступенчатой втулки. При этом на кольце 6 установлено второе подвижное нажимное кольцо 7, подпружиненное стержнями 8, установленными в оправке и проходящими сквозь отверстия 9, выполненные в подвижном опорном кольце 6.

Между конусными поверхностями опорных колец размещены деформирующие шарики 10 и 11 с разными диаметрами, выступающие из радиальных отверстий сепаратора 12, который выполнен с технологическими отверстиями 13, служащими для установки пружинных стержней.

Опорные кольца от осевого смещения удерживаются на оправке при помощи шайбы 14 и гайки 15, навернутой на резьбу оправки.

Раскатник работает следующим образом.

Перед обработкой отверстия производится настройка инструмента на требуемый диаметр. Для этого, наворачивая гайку 15 по резьбе оправки, воздействуют на подвижное опорное кольцо 6, которое одновременно двумя конусными поверхностями 16 и 17 выжимает шарики 10 и 11 в отверстия сепаратора 12 до упора в ступенчатый кольцевой шаблон-ограничитель (на чертеже не показан). При этом шарики 11 первого ряда раскатника выступают из отверстий сепаратора на большую величину, образуя больший диаметр раскатника, чем шарики второго ряда.

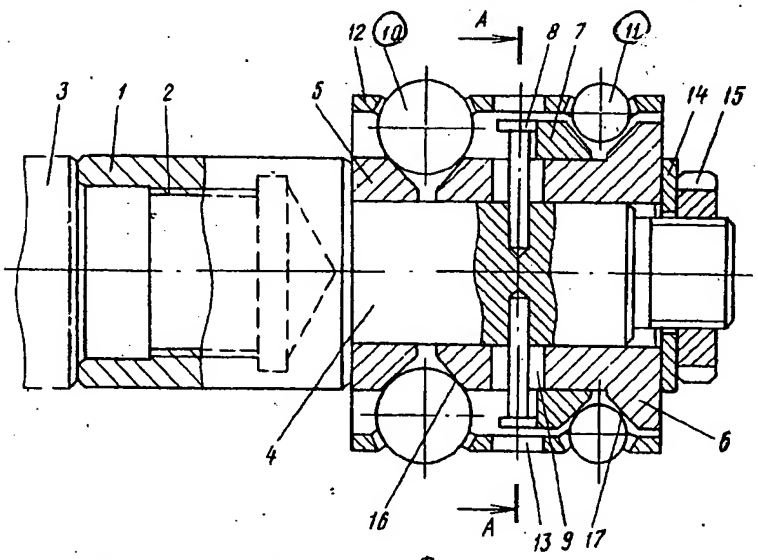
Настроенный на требуемый диаметр раскатник вводят в отверстие обрабатываемого изделия и сообщают вращение изделию или борштанге.

Вступая в контакт с поверхностью обрабатываемого изделия, шарики 11 утопают в отверстиях сепаратора 12 и образуют диаметр первого ряда шариков раскатника, равный диаметру обрабатываемого отверстия с припуском на наклеп. При этом шарики воздействуют на конусные поверхности опорного кольца 6 и кольца 7 и сдвигают кольцо 7 по поверхности кольца 6, отгибая влево пружинные стержни 8 и образуя упругий механизм раскатывания, с помощью которого начинается процесс обработки отверстия для создания наклепа на поверхности. Затем при вступлении в контакт с поверхностью обрабатываемого отверстия второго ряда деформирующих шариков 10 взаимодействием последних с конусными поверхностями 16 кольца 6 и кольца 5 производят окончательное выглаживание обрабатываемой поверхности жестким механизмом раскатывания, повышая чистоту поверхностного слоя и слоя наклепа.

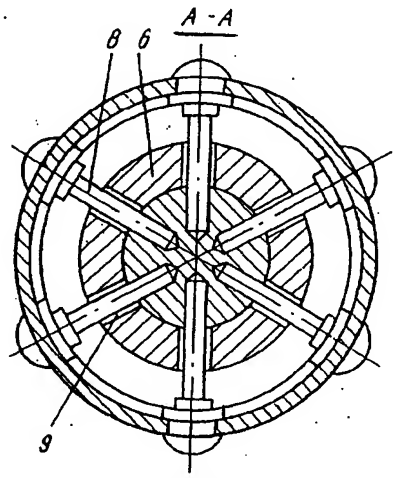
Таким образом, в изделиях из металла невысокой твердости совмещением в инструменте упругого и жесткого механизмов раскатывания производится повышение чистоты обрабатываемой поверхности за один проход инструмента без применения предварительной обработки инструментом с упругим механизмом раскатывания для создания наклепа и последующей обработки инструментом с жестким механизмом раскатывания для повышения чистоты поверхности.

Формула изобретения

Раскатник по авт. св. № 247072, отличающийся тем, что, с целью обеспечения совмещения в инструменте упругого и жесткого механизмов раскатывания и повышения чистоты обрабатываемой поверхности, он снабжен стрежнями, установленными в оправке и проходящими сквозь отверстия, выполненные в опорном кольце.



Фиг. 1



Фиг. 2

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